



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/477,422 | 01/04/2000 | JON C. SCHAEFFER | 13DV-13434 | 9215 |

7590

05/15/2002

ANDREW C HESS
GENERAL ELECTRIC COMPANY
ONE NEUMANN WAY H 17
CINCINNATI, OH 452156301

EXAMINER

MEEKS, TIMOTHY HOWARD

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 05/15/2002

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/477,422

Applicant(s)

SCHAEFFER, JON C.

Examiner

Timothy H. Meeks

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20, 26, 47, 73 and 89-94 is/are pending in the application.
- 4a) Of the above claim(s) 1-7, 14, 15, 19, 20 and 26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-13, 16-18, 47, 73 and 89-94 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 1762

DETAILED ACTION

Application Status

The amendment filed on April 3, 2002 has been considered. Claims 8-13, 16-18, 47, 73, and 89-94 are under consideration. Claims 1-7, 14, 15, 19, 20, and 26 remain withdrawn from further consideration as being directed to a nonelected invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 8-10, 12, 13, 47⁷³ and 89-94 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Support for the limitations of "values of greater than 24 to 28% aluminum" in claim 8, "under deposition conditions effective to....", values of greater than 24 to 28% aluminum and 8 to less than 18 wt% platinum, average nickel concentrations, "so as to be non-stoichiometric.....", and "oxidizing the aluminide layer...." in claim 29⁴⁷, values of greater than 24 to 28% aluminum and 8 to less than 18 wt% platinum in claim 56⁷³, and values of greater than 24 to 28% aluminum and values of 8 to less than 18 wt% platinum and the claimed average nickel concentrations in claim 89 is totally lacking in the application as originally filed.

Art Unit: 1762

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 8-13, 16-18, 47, 73, and 89-94 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 8-13, 16-18, 47, 71, and 87-92 of copending Application No. 09/244,578. Although the conflicting claims are not identical, they are not patentably distinct from each other because they differ only in the overlapping concentration ranges of Al, Pt, and/or Ni.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who

Art Unit: 1762

has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 8-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Murphy (5,716,720).

Murphy discloses the claimed process at col. 3, lines 55-58, col. 4, lines 5-19, col. 5, N5 substrate in the examples, and the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16-18 and 89-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy.

Murphy does not explicitly disclose the aluminum source activity as recited in claims 16 and 87. However, Murphy discloses deposition at low aluminum activity conditions at col. 4, lines 25-30 which one of ordinary would consider to include values in the claimed range. Therefore, use of the claimed aluminum values would have been obvious absent evidence showing criticality of using these values over other "low" activities. The oxidizing step of Murphy meets the annealing/diffusing step of the claims.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shankar (4,501,776).

Art Unit: 1762

Shankar discloses the claimed process at col. 1, line 50 to col. 2, line 41 with the exception that the ranges for the process conditions taught by Shankar overlap the claimed ranges. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the ranges disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Malagari*, 182 USPQ 549.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shankar in view of Duderstadt et al. (5,238,752).

Shankar lacks teaching of EB vapor depositing a columnar structure yttria stabilized zirconia TBC. However, because Duderstadt discloses that deposition of such TBC on platinum aluminide coating by EBPVD provides the advantages described at col. 5, lines 1-10 (abstract, col. 7), it would have been obvious to have deposited the TBC to achieve these advantages.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shankar in view of Wukusick et al. (5,100,484).

Shankar teaches nickel-based alloy turbine substrates but does not disclose the contents of aluminum, rhenium, etc. thereof. However, because Wukusick discloses that substrates with the claimed components are known alloys for use as turbine parts, it would have been obvious to use such conventional substrates with the expectation of their being effective for turbine substrates.

Art Unit: 1762

Claims 73 and 112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conner et al. (ASME article) in view of Duderstadt.

Conner discloses the claimed process at page 2, "Platinum Aluminide Coating", Figure 3, and page 5 with the exception that Conner does not teach depositing a TBC. Application of a TBC would have been obvious in view of Duderstadt for the reasons set forth above.

Claims 8, 10, 11, and 89-92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conner et al. (ASME article) in view of Shankar.

Conner discloses the claimed process at page 2, "Platinum Aluminide Coating", Figure 3, and page 5 with the exception that Conner is silent as to particular aluminiding and platinum diffusion conditions. It would have been obvious to use the claimed diffusion and aluminiding conditions in view of Shankar for the reasons set forth above.

Claims 93 and 94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conner et al. (ASME article) in view of Shankar as applied above and further in view of Duderstadt.

Application of a TBC would have been obvious in view of Duderstadt for the reasons set forth above.

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conner et al. (ASME article) in view of Shankar as applied above and further in view of Wukusick.

Use of the claimed substrates would have been obvious in view of Wukusick for the reasons set forth above.

No rejections based upon prior art are applied to claim 47 in this office action because the art does not teach or reasonably suggest the limitation that both Al and Pt concentration decrease with depth of the intermediate phase as claimed. The closest art is Murphy, however, it is explicitly disclosed therein that Pt concentration decreases with depth in the intermediate phase. However, applicants do not have support for the remaining limitations in this claim as identified above, therefore, the claim is not patentable under 35 USC 112, first paragraph.

Response to Arguments

Applicant's arguments filed on April 3, 2002 have been fully considered but they are not persuasive.

Applicants argue that the aluminum and platinum concentrations from 24-28% and from 8 to less than 18 %, respectively, are supported by figure 4 and the discussion at page 9, line 24 through page 10, line 2. However, that disclosure specifically states that outside the range of 18-45 % platinum and 18 to 24 % aluminum, the protection afforded is decreased and hence is not part of the invention described in the specification giving the desired results. Furthermore, different results are clearly indicated for values less than 18 % platinum and greater than 24% aluminum. Applicants show a range from 0 to 45 % platinum in figure 4 but claim a lower endpoint of 8% and a range of 18 to 30% aluminum but claim an upper limit of 28%. Furthermore, figure 4 must be considered in its entirety and when viewing values of platinum at less than 18 percent in consideration of the aluminum values of 18-28 %, the coating performance has no life or very poor life. It is clear from figure 4 that applicants did not have

Art Unit: 1762

possession of platinum values of 8-18 % or aluminum values of 24-28% to achieve their desired results.

Applicants argue that the nickel concentration ranges now claimed follow from possession of the portion platinum and aluminum ranges now claimed. As set forth above, it is not agreed that applicants were in possession of the platinum range from 8 to 18 and aluminum from 24 to 28. Furthermore, the discussion on page 9 trying to explain why the nickel range is supported is very speculative and makes many unfounded assumptions. For example, the hypothetical migration of nickel amounts is clearly dependent on the contents of nickel and other metals in the substrate as well as process conditions such as diffusion times, temperatures, etc. There is no way that a concrete range of 50-60% nickel can be supported from the specification as filed. The discussion with respect to "nonstoichiometric" on page 10 is equally speculative and unsupported by factual evidence.

Applicants argue that page 2, lines 14-15 supports the claimed oxidizing step as well as the annealing described on page 9, lines 6-12. The disclosure at page 2 refers to the prior art and the specification does not otherwise mention that an oxidation step of the aluminide is performed or would be desirable to perform in the embodiments of applicant's invention. The annealing step on page 9 in no way suggests an oxidation. Applicants seem to argue that since the examiner held Murphy's oxidation step to teach applicants' claimed annealing step that this makes the annealing step the same as an oxidation of the aluminide. In Murphy's oxidation step, he heats the substrate to a temperature in the claimed range which meets the limitation of the claimed annealing step. On the other hand, to say the substrate is annealed with absolutely no indication of providing an oxidizing atmosphere or formation of oxide is not an oxidizing step.

Art Unit: 1762

Applicants argue that Murphy does not diffuse platinum in a separate step from the aluminum deposition and diffusion. However, the claims as currently written do not exclude simultaneous performance of the diffusing of platinum and aluminum. There is no requirement in the claims to perform the steps in the order recited. The process of Murphy performs all method steps as now claimed.

Applicants argue that Shankar discloses nickel, cobalt, and iron-base alloys as opposed to nickel base superalloys and is silent as to aluminum source activity. It is believed that applicants have read the term "nickel, cobalt, and iron-base alloy " in Shankar to mean an alloy containing nickel, cobalt, and iron. This clearly is not the meaning intended given the disclosure of aluminide coatings for turbine parts in Shankar and the word "base". The word "base" indicates a majority component of which there can only be one in an alloy. Furthermore, an alloy of all three metals is not what is used for turbines. This is evidenced by Panzera (U.S. 3,979,273, cited by applicants on 5/16/00) which describes the alloys as "nickel-, cobalt-, or iron-base alloys" throughout as used for turbine parts. With respect to aluminum activity, Shankar discloses mixtures having 1-35 % aluminum source which would result in mixtures having aluminum activities in the claimed range

Applicants argue that the examiner has used helpful portions of the Shankar and Duderstadt references while ignoring helpful portions. There no unhelpful portions to either reference in terms of suggesting to one of ordinary skill in the art to apply a TBC to a platinum aluminide coating on a nickel-base alloy for the advantages previously described in Duderstadt.

Art Unit: 1762

Applicants argue that there is no suggestion to use the aluminide coating for the substrate of Wukusick. As set forth above, Shankar teaches applicability of the aluminide coating for nickel-base alloys, which is what the Wukusick substrate is.

Applicants argue that there is no motivation to use the Duderstadt TBC on a non-pack-cementation generated aluminide coating like the Conner aluminide. First of all, Duderstadt states that the aluminide can be deposited by any acceptable technique (col. 5, lines 44-46). Secondly, there is no reason one would not believe that a non-pack generated aluminide would achieve the advantages from the TBC as taught by Duderstadt and applicants have provided no reason to support the argument that one would not expect to achieve the TBC advantages. As evidence that one would apply TBC to a CVD aluminide, the examiner points to Murphy which does in fact apply such TBC.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

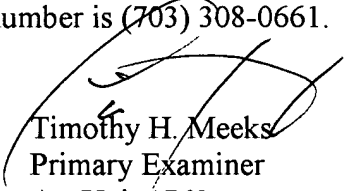
Art Unit: 1762

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy H. Meeks whose telephone number is (703) 308-3816. The examiner can normally be reached on 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-5408 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Timothy H. Meeks
Primary Examiner
Art Unit 1762

final
May 13, 2002